Section 3C: Homework Solutions

August 31, 2005

11. Suppose the current cost of gasoline is $ 1.80 per gallon. Find the current price index number, using the 1975 price as the reference value.

Solution:
The price of gas in 1975 was 56.7c. Taking 1975 as a reference value, we find the current CPI to be

$$\frac{180.0}{56.7} \times 100 \approx 3.17$$

□

14. Suppose it cost $10 to fill a gas tank ini 1975. How much would it have cost to fill the same tank in 1995?

Solution:
Taking the price of gas in 1975 as a reference value, we note from the table on page 182 that the price index for 1995 was 212.5. So the same take of gas would cost

$$10 \cdot 2.125 = \$21.25$$

□

17. Suppose you needed $20,000 to maintain a particular standard of living in 1975. How much would you have needed in 2002 to maintain the same standard of living?

Solution:
From the table on page 185, we find the total adjustment for inflation factor to be:

$$\frac{\text{CPI}_{2002}}{\text{CPI}_{1975}} = \frac{179.9}{53.8} \approx 3.34.$$

So you would need $20000 \cdot 3.34 = \$66800$ to maintain your lifestyle.

□

22.A car cost $4500 in 1975. What was its price in 2000 dollars?

Solution:

$$\frac{172.2}{53.8} \cdot 4500 \approx \$14403$$

□

27. Suppose you see a house valued at $250,000 in Denver. Find the price of a comparable house in Palo Alto, Sioux City and Boston.

Solution:
(i) Palo Alto

$$\frac{365}{87} \cdot 250,000 \approx \$1,048,850$$

(ii) Sioux City

$$\frac{47}{87} \cdot 250,000 \approx \$135,057$$

(iii) Boston

$$\frac{182}{87} \cdot 250,000 \approx \$522,989$$

□

30. Suppose you see a house valued at $1,000,000 in Manhattan. Find the price of a comparable house in Providence, Spokane, and Tulsa

Solution:
(i) Providence

$$\frac{91}{495} \cdot 1,000,000 \approx \$183,838$$

(ii) Spokane

$$\frac{78}{495} \cdot 1,000,000 \approx \$157,576$$

(iii) Tulsa

$$\frac{52}{495} \cdot 1,000,000 \approx \$105,051$$

□

33. The average cost of college at four year private and public universities rose from $5900 in 1980 to $25,100 in 2002. Calculate the relative change in cost from 1980 to 2002, and compare it to the overall rate of inflation as measured by the CPI.

Solution:
The relative change is:

$$\frac{25100 - 5900}{5900} \approx 3.25 = 325\%$$

The rate of inflation measure by the CPI is

$$\frac{\text{CPI}_{2002}}{\text{CPI}_{1980}} = \frac{179.9}{82.4} \approx 2.18$$

This tells us that even after adjustment for inflation, college costs are still rising.

□

43. In what year was the purchasing power of the minimum wage the highest? Explain.

Solution:
Purchasing power for the minimum wage was highest in 1968. From the table on page 193, we consider the minimum wage adjusted for inflation in terms of 1996 dollars.

□

44. You are listening to an argument in which Paul claims that the minimum wage has never been higher, because it has been rising for the past 60 years. Paula counters that the minimum wage actually needs to be increased, because it has been decreasing almost consistently since 1968. Based on the data in the minimum wage table above, write a one-paragraph explanation of each argument. Which argument do you think is stronger? Why?

Solution:
The statement Paul makes is correct. However, he does not factor inflation into his argument. The purchasing power of 2002 dollars is significantly lower than that of decades before. Paula, makes a statement that may seem incorrect on the surface, but with closer inspection one finds that her argument is far more reflective of reality than Paul's. Paula has adjusted for inflation and notes that even though the minimum wage rate increases, inflation has been increasing faster. This results in a smaller purchasing power of money.

Paula has the stronger argument for the reasons listed above.

□